

REPORT DOCUMENTATION PAGE

Form Approved
OMB NO. 0704-0188

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1. AGENCY USE ONLY (Leave Blank)		2. REPORT DATE 10/15/2001	3. REPORT TYPE AND DATES COVERED Final Report 03/31/00 – 03/30/01
4. TITLE AND SUBTITLE Acquisition of Scanning Laser-Doppler Vibrometer System for Detection and Nondestructive Characterization of Interfaces		5. FUNDING NUMBERS DAAD19-00-1-0096	
6. AUTHOR(S) Dimitri Donskoy			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Stevens Institute of Technology Castle Point on Hudson, Hoboken, NJ 07030		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U. S. Army Research Office ATTN: AMSRL-RO-BI (Technical Reports) P.O. Box 12211 Research Triangle Park, NC 27709-2211		10. SPONSORING / MONITORING AGENCY REPORT NUMBER P-40712-MS-RIP .1	
11. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.			
12 a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited.		12 b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The objective of this grant is to purchase a Scanning Laser-Doppler Vibrometer System PSV-300-H from Polytec PI. The system was acquired for the total cost of \$166,450 of which \$40,000 was provided by this DURIP grant. The rest of the funds came from research contract and matching contribution (\$50,000) from Stevens Institute of Technology. The system was delivered in Spring of 2000 and was extensively utilized in ARO projects # DAAG-98-1-0402 and # DAAD19-00-1-0039 related to the Nonlinear Seismo-Acoustic Land Mine Detection and Discrimination Technique. Thus, the Scanning Laser-Doppler Vibrometer System became major measuring tool in both laboratory and field tests. The utilization of the system also contributed to education and outreach efforts. A number of graduate students had used the system while working for the ARO and other projects. The system was extensively used for numerous demonstration of the developed land mine detection technique to potential industrial partners, investors, as well as to groups of high school and undergraduate students.			
14. SUBJECT TERMS Scanning Laser-Doppler Vibrometer System, acquisition, land mine detection and discrimination, nondestructive characterization		15. NUMBER OF PAGES 1	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OR REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION ON THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL

NSN 7540-01-280-5500

Standard Form 298 (Rev.2-89)
Prescribed by ANSI Std. Z39-18
298-102

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1. List of manuscripts

Dimitri M. Donskoy, Alexander E. Ekimov, and Jianhui He. Nonlinear seismo-acoustic land mine detection and discrimination. Journal of Acoustical Society of America, v.108, no.5, p.2649, 2000

Dimitri Donskoy, Nikolay Sedunov, and Edward Whittaker, Phase-amplitude-modulated laser and microwave vibrometers. Journal of Acoustical Society of America, v.108, no.5, p.2623, 2000

Dimitri Donskoy, Nikolay Sedunov, Alexander Ekimov, and Charles Cannon, Nonlinear seismo-acoustic land mine detection: method and instrumentation. Proceedings of UXO –Countermine Forum, 2001

Dimitri Donskoy, Nikolay Sedunov, Alexander Ekimov, and Mikhail Tsionskiy, Optimization of Seismo-Acoustic Land Mine Detection Using Dynamic Mechanical Impedances of Mines and Soil. Submitted to Proceedings of SPIE – The international Society for Optical Engineering "Detection and Remediation Technologies for Mines and Minelike Targets VI", 2001

2. Scientific personnel

Dimitri Donskoy (PI)
Edward Whittaker (Co-PI)
Nikolay Sedunov (Research Engineer)
Alexander Ekimov (Research Scientist)
Mikhail Tsionskiy (Graduate Student) – awarded master's degree
Jianhui He (Graduate Student) – awarded master's degree
Dennis Hromin (Undergraduate student) – awarded bachelor's degree

3. Report of inventions

D.Donskoy and A.Sutin, Method and apparatus for acoustic detection of mines and other buried man-made objects, U.S.Patent #5,974,881, 1999

D.Donskoy and A.Sutin, Method and apparatus for acoustic detection of mines and other buried man-made objects, U.S.Patent #6,134,966, 2000

D.Donskoy, N.Sedunov, and E.Whittaker, Phase-Amplitude Modulation Electromagnetic Wave (PAM-EW) Vibrometer, Patent pending, 2000

4. Scientific progress and accomplishments

The acquired Scanning Laser-Doppler Vibrometer System was extensively utilized in ARO projects # DAAG-98-1-0402 and # DAAD19-00-1-0039 related to the Nonlinear Seismo-Acoustic Land Mine Detection and Discrimination Technique. The System became major measuring tool in both laboratory and field tests allowing successful progress of these research projects. Thus, the underlying physical mechanism of the detection technique was experimentally validated using the System.

The utilization of the system also contributed to education and outreach efforts. A number of graduate students had used the system while working for the ARO and other projects. The system was extensively used for numerous demonstration of the developed land mine detection technique to potential industrial partners, investors, as well as to groups of high school and undergraduate students

5. Technology transfer

The acquisition and extensive utilization of the Scanning Laser-Doppler Vibrometer System to the great extent supported the transition of 6.1 ARO projects to 6.2 program directed by U.S.Army SECOT at Fort Belvoir.